Computers & Education 56 (2011) 632–641

Contents lists available at ScienceDirect

Computers & Education

journal homepage: www.elsevier.com/locate/compedu

Incorporating podcasting and blogging into a core task for ESOL teacher candidates

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ARTICLE INFO

Article history:
Received 4 March 2010
Received in revised form
7 October 2010
Accepted 8 October 2010

Keywords:
Applications in subject areas
Authoring tools & methods
Improving classroom teaching
Postsecondary education
Teaching/learning strategies

ABSTRACT

Due to innovation and globalization in education, educators of English for Speakers of Other Languages (ESOL) are encouraged to use such instructional technologies as podcasting and blogging, but studies on integrating these technologies into assignments are rare. This project revealed how ESOL teacher candidates implement instructional technology skills to help English learners and the teacher candidates' attitudes and processes toward implementing podcasting and blogging as a core assignment. Using qualitative research, five themes emerged: (a) ESOL teacher candidates' attitudes and self-assessments, (b) their implementation of podcasting and blogging, (c) their challenges and rewards, (d) the impact on their professional development, and (e) their own impact on new generations of students, particularly English learners. This discussion highlights ESOL teacher candidates' experiences while learning podcasting and blogging. ESOL teacher candidates, recognizing their future students as a new generation, are highly proactive learners and want very much to be competent and confident in their own teaching.

1. Background

Innovation in educational practice is in demand in a changing global world, particularly for English for Speakers of Other Languages (ESOL) educators. The current generation of teacher candidates is being encouraged to become more skillful users of technology in teaching young learners (Kim, 2009a) who are *digital natives* (Prensky, 2001). Implementing podcasting, however, can be problematic and challenging for teachers (Kim, Rueckert, & Hwang, 2008). Kim et al. (2008) examined how some teachers' negative attitudes affected the implementation of new instructional technology tools. McKinney, Dyck, and Luber (2009), however, stated that mobile learning provides the educational benefits of computers, particularly podcasts, compared to in-class lectures. Educators frequently use podcasting and blogging in their classrooms, but the teaching and learning context of these technologies has not been fully assessed.

Although English learners (ELs) are well described (Ellis, 2008), few studies have examined ESOL teacher candidates' implementation of podcasts and blogs to improve teacher education. Furthermore, ESOL teacher candidates are often challenged in supporting English learners who hail from a wide range of cultural, linguistic, and socio-economic backgrounds. Knowing how ESOL teacher candidates respond to and implement instructional technology may greatly assist ESOL teachers. By sharing EL case-study analyses through podcasts and blogs, ESOL teacher candidates can dialogue as they share their projects with education professionals and others.

Investigating how ESOL teacher candidates implement various instructional technologies may support other ESOL educators in global contexts. The ESOL teacher candidates in this research context were enrolled in the ESOL endorsement program in Second Language Literacy (SLL) course at a research university in the southeastern United States. They were required to complete a core project, the EL case-study portfolio, which called for not only the analysis of real ELs' cultural–societal backgrounds and their speaking, reading, and writing processes to gain experience working with issues common to ELs, but also the creation of podcasts and blogs as tools for sharing this analysis with

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doi:10.1016/j.compedu.2010.10.005

colleagues and parents. Through the EL case-study project, ESOL teacher candidates assessed the ELs' L2 language and literacy development in their social worlds while simultaneously learning how to podcast and blog the study.

Because technology such as podcasting and blogging is relatively new to teacher education, previous studies are scarce. Putman (2008) explored how to create podcasting with children. Recently, Kim (2009a) discussed positive experiences and strategies for introducing podcasts and blogs into a teacher-training program. She developed useful guidelines and stated the importance of incorporating technologies in teacher education. Ongoing research in this area is crucial to the preparation of future educators.

The word *podcasting* appeared in 2004 (Hammersley, 2004) to describe Internet-based radio shows or other audio programs available for download over the Internet to be played through a computer and on MP3 players such as the iPod (Stephens, 2007). Podcasting is a relatively new and rapidly developing instructional technology. In my study, the ESOL teacher candidates used Audacity (2010) and the LAME encoder (a free download for the Windows and Mac operating systems) (2010) or GarageBand (2010) for Mac to create audio files. After editing, the teacher candidates uploaded the files to the Web. To blog their EL case studies, they used various blog tools such as Blogger (Google, 1999) and Google sites (Google, 2009). A *blog* is a type of website that is ordinarily maintained by an individual with frequent updates (called 'entries'). Interactive blogs usually combine text, images, photos, and possibly interactive media (e.g., podcasts, video, etc.).

This study focused on the sociocultural constructive aspects of the ESOL teacher candidates' perceptions, their learning processes, the pedagogical implications for them, and the use of podcasting and blogging as a part of completing their EL case-study project. The Second Language Literacy (SLL) course was designed to provide students with a critical understanding of instructional delivery that specially addresses to the linguistic and literacy needs of minority and heritage communities. The EL case-study project consisted of two phases: (a) conducting the EL case-study in small groups or pairs in the K–12 context and (b) podcasting audio files, such as interview and reading samples, and blogging the results.

The ESOL teacher candidates shared their projects with others on the Web as podcasts and blogs. To gain a deeper understanding of teaching and the learning styles of ELs in a social context, Cole (1991) elaborated on the sociocultural constructivist theoretical framework: Knowledge is not an individual tenure; rather, it is collective and derives from participation in cultural activities. Within the sociocultural perspective, knowledge is personally constructed and socially enriched (Windschitl, 2000). This study will be of use to other educators who plan to implement new technologies in their classrooms.

This study focuses on phase 2 in the ESOL teacher candidates' experiences and on their reflections while podcasting and blogging. The results demonstrated how the teacher candidates perceived new technology and its relationship to the learning process. Two research questions guided the study.

1. How do ESOL teacher candidates produce podcasts and blogs while compiling their EL case-study project? How do their attitudes toward podcasts and blogs change, and how do they grapple with processes geared toward implementing instructional technology?
2. How do ESOL teacher candidates construct their pedagogical reports via podcasting and blogging? What matters?

1.1. Current perspectives on podcasting and blogging

Sloan (2005) listed numerous uses of podcasts, including distance learning, self-paced learning, remediation of slower learners, providing extra content, helping students with reading or learning disabilities, providing guest speakers from remote locations, presenting guest speakers to many sections and classes, and offering a richer learning environment. Rosell-Aguilar (2007) explored the challenges and advantages of podcasting for language learning. Challenges included increased workload, technical issues, information overload, the impact on student–teacher relationships, redesigning course objectives, planning, and the absence of a written-literacy component. Advantages were portability, attractiveness, motivation, cost effectiveness, public access, and the availability of additional resources. Kaplan-Leiserson (2005) added additional podcasting contributions: assisting auditory or visual learners, offering a new channel for material review, aiding non-native speakers, providing feedback to learners, reflecting instructors' training and lectures, replacing online sessions, and providing supplementary content or being a part of a blended solution.

Students' motivation and their ability to use WebCT (i.g. bulletin usage) affected their ability and achievement in their academic activities. Students' individual differences, such as age and gender, also influenced their success in online learning (Hoskins & Hooff, 2005). Individuals' perceptions about the ease of use and usefulness of technology significantly influenced their attitudes towards its implementation (Lau & Woods, 2008). Furthermore, if users perceive the usefulness of learning objectives, they are willing to learn, so such a perception significantly factors into users' acceptance and learning of the subjects. Kao and Tsai (2009) investigated teachers' attitudes toward Web-based professional development focusing on their Internet self-efficacy and their beliefs about Web-based learning. The researchers reported that teachers' Internet self-efficacy and beliefs about Web-based learning have positive consequences on their Web-based professional development.

Harris and Park (2008) observed that studies of student-created podcasting are rare: Most studies have been conducted about how students learn, using podcasts created by the instructor. We urgently need, however, to address processes focusing on learners' attitudes and practice incorporating these instructional technologies into assignments (Kim, 2009a). Investigating the factors that promote the effective use of methods would encourage our holistic understanding and our ability to predict of the acceptance and use of educational technologies (Lau & Woods, 2008). Thus, I deemed it appropriate to investigate how ESOL teacher candidates create podcasting as a part of their assignments.

Most studies have been conducted with large numbers of students using quantitative research (Hoskins & Hooff, 2005; Kao & Tsai, 2009), which doesn't provide a holistic view of the learning process. Podcasting is consistent with a constructivist view of the learning processes: The learner constructs knowledge through active exploration, observation, processing, and interpretation (Rosell-Aguilar, 2007). The scope of qualitative research provides a window for observing the learner's constructive view of the learning process; thus, I chose to use qualitative research to investigate ESOL teacher candidates' learning processes while they are podcasting and blogging their projects.

1.2. Podcasting and blogging in education

As stated previously, podcasting and blogging are relatively new to education. Mobile learning, as a successor to e-learning or computer-based learning, extends their advantages with the flexibility of portable wireless technologies (Evans, 2008). Podcasts are one slice of the mobile-learning pie, and several universities are pioneering the use of podcasting as an instructional-delivery tool.

The iTunes U initiatives in several universities have boosted the use of podcasting and blogging in higher education. For example, Duke University distributed iPods to incoming students in 2006 under the Duke Digital Initiative, in collaboration with Apple Computer, and the university shared the positive results from the initiative (Duke University, 2006). The primary results include (a) success in supporting key curricular areas, such as foreign language learning, writing, service learning, and student research, and (b) increased numbers of courses involving multimedia-production activities, enhanced student engagement and student learning. Stanford University also hosted iTunes U (Apple Computer, 2005); as a consequence, students can access audio and video content such as school information and various lectures via MP3 players, iPods, and personal computers. The College of Education in the University of South Florida has piloted iTunes U to provide useful materials (e.g., iPods, Headsets) to faculty and has run a series of faculty workshops through iTunes initiatives (University of South Florida, 2007). Georgia colleges and universities, the University of California–Berkeley, and the University of Wisconsin at Madison are also participating in the iTunes U initiative, which continues to expand (Lee, McLoughlin, & Chan, 2008). In particular, the University of South Florida offers online sessions and essential information via podcasts (e.g., Library Information, Tech-Ease). Students download podcasts through media players (e.g., iPods, MP3 Players, smart phones, PDAs, and personal computers) and listen with no limitations on time and place.

In his chemistry class, Woodward (2007) used podcasting to acquaint students with upcoming activities. Cebeci and Tekdal (2006) used the principles of learning objects in conducting research into educational podcasts. The attributes include *simple to produce*, *immediate*, *educationally focused*, *reusable*, and *engaging* (Wikipedia, 2007). Following Cebeci and Tekdal's study, Lee et al. (2008) described how engaging in the podcasting exercise promoted collaborative knowledge building. They found that collaborative development of audio learning objects supports students' conceptualizations of disciplinary content as they share with peers, create social perspectives, and negotiate meaning. The learning objects enable the student to conceptualize disciplinary content to be shared with peers as which stimulates both individual and collective learning and support the students' creation of disciplinary knowledge. Also, the application of these key features in creating learner- generated podcasts motivates and encourages students. For instance, Lee et al. (2008) shared how his university students produce podcasts following production process such as scriptwriting & editing, presentation, audio recording & editing, and publishing & distribution; and even as they do all this, they are simultaneously creating knowledge through collaborative learning.

Evans (2008) described the effectiveness of mobile learning in the form of podcasting for teaching university students as providing college students podcasts as a series of reviews podcasts after completing a course in Information and Communication Technology. He concluded that podcasts are more effective revision tools than the students' textbooks and also more effective than the students' own notes in their learning process. With the flexibility of time and location that podcasting offers, it evinces considerable potential as an innovative learning tool.

While podcasting has taken off in the last few years, blogging has seen similar growth. Bloggers had constructed more than 70 million blogs by April of 2007, creating 120,000 new blogs every day (Guardian Newspaper, 2010). Blogs are often defined to as "websites consisting of dated entries typically listed in reverse chronological order on a single page" (Kolari, Finin, & Joshi, 2006, p. 92). With the advent of various free blogging products such as Blogger.com and Blog.com, blogs have become their own phenomenon in the field.

Blogging is also frequently used for educational purposes. Churchill (2009) noted the benefits of blogging in teaching and learning, suggesting that effective blog-based activities for learning, such as interactive blogs focused on the task, can be highly useful. Also, blogs can be useful as assessment and information-exchange tools as well as avenues to acknowledge others' opinions. Ducate and Lomika (2008) investigated French and German college students' progress while reading and writing blogs. They found that blog projects fostered students' ownership and creativity, allowed students to experiment with languages, facilitated expression in the blog context, and provided target cultures. Hsu, Wang, and Comac (2008) reported that the use of audioblogs to help ELs supported students' oral performances and permitted individual feedback. They confirmed the easy use of audioblogs and students' language-learning experiences. Petersen, Divitini, and Chabert (2008) emphasized that blogs are a good tool for creating a sense of community among students. In line with Moore's theory of transactional distance, Deng and Yuen (2009) explored the pedagogical benefits of blogs as reflective as well as interactive devices.

1.3. Podcasting and blogging in teacher–education settings

Integrating technology into teacher education has been essential to support education in the information age (Brown & Warschauer, 2006). The National Council for Accreditation of Teacher Education (2002) emphasized the importance of technology integration for teachers: Preparing teachers to use various instructional technologies is crucial. Brown and Warschauer (2006) investigated factors affecting pre-service teachers' decisions to integrate technology during field placement. They advocated integration of technology into methods courses and the revision of the content of information courses. They also emphasized the necessity of mentoring pre-service teachers with technology support.

Bai and Ertmer (2008) and the Lambert, Gong, and Cuper (2008) study suggested that teacher educators' pedagogical beliefs and their attitudes toward technology influenced their use and integration of technology into their course work; preservice teachers' prior experiences with technologies and their computer attitudes and abilities significantly influenced the move from a single-technology course. The researchers advocated broader integration of technology across teacher-preparation programs and that additional educational–technology courses be integrated into teaching and learning instead of basic computer skills. Most of the empirical studies connected with technologies, in particular podcasting and blogging, are related to higher education, and seldom deal with in K–12 and teacher education (Hew, 2009). Current studies related to podcasting and blogging are mostly related to usage and informative resources (Kim, 2009a); therefore, we need additional empirical studies in teacher education (Lord, 2008). Kim (2009a) examined how blogs can serve as a unique, innovative tool to enhance the development of student reflectivity. Kim (2009b) also explored podcasting and blogging as a composition process, which became part of the learning process for teacher candidates as they conducted their own case studies. Despite the ongoing progress of integrating technology into teacher education, questions remain about how to integrate these instructional technologies into assignments;

teacher educators can benefit from the investigation into the integration of podcasting and blogging in a meaningful assignment (Hew, 2009; Lord, 2008). Since their students will master these learning objects through lived experiences, this learning will be transferable to their future teaching.

2. Materials & methods

This qualitative research study was conducted using purposive sampling (Merriam, 1998) of ESOL teacher candidates who were implementing instructional technology in the SLL course during the fall of 2007 and spring of 2008 at a research university in the southeastern United States.

2.1. Participants

By means of purposive sampling (Merriam, 1998), I selected 3 graduate ESOL teacher candidates out of 16 enrolled in the fall of 2007 and 3 undergraduates out of 23 enrolled in the spring of 2008, all seeking an ESOL certification in elementary or secondary education. All participated in this study voluntarily. Participants included 5 female students and 1 male student: Lisa, Joy, and Jackie (undergraduates), and Rebecca, Michelle, and Kyle (graduates), all pseudonyms. Kyle and Michelle had previous experience using technology; the others had no experience with either blogs or podcasts.

Kyle, who had taught in various countries, self-assessed on an intermediate level with good prior knowledge of instructional technologies, had already used several tools (e.g., blogs and podcasts). Kyle voluntarily supported his colleagues throughout the semester. Michelle, who had created a podcast in the previous semester, felt very competent carrying out the project, but she still needed help. Rebecca, the oldest student, struggled throughout the semester. In the process of changing her career from the health field, she had no background knowledge of instructional technologies and labeled herself a "technology immigrant."

Joy is a middle-aged undergraduate student changing careers from business to education, had always wanted to be a teacher. Although very willing to try, Joy struggled to complete her assignment. Lisa, with limited access to technology at home, similarly struggled with the project, but was keen to learn and excited despite her difficulties. Jackie, an undergraduate taking an internship in a kindergarten class, had a very positive attitude toward her course work and the new technology tools, recognizing that all teachers need to be skillful in technology in order to enhance their teaching.

The ESOL teacher candidates enrolled in the SLL course were required to complete EL case-study portfolios. As the case-study pedagogy engaged the ESOL teacher candidates in a dialogue with ELs' real-life situations in school settings, each case study also yielded an EL's profile of individual language learning and educational settings. After analyzing the EL's language development, the ESOL teacher candidate identified and wrote up the difficulties that the EL was encountering in the current situation and offered potential solutions and analyses of the instructional situation in phases. Phase 1 consisted of conducting the EL case-study and Phase 2 of podcasting and blogging the results. In Phase 1, the ESOL teacher candidates (a) collected data from observations, samples of reading and free writing, think-aloud protocols, and interviews with the EL; (b) analyzed multiple data sets (e.s., interview transcriptions, verbal reports, reading samples for miscue analysis, and writing samples); (c) described a problem scenario specific to the learner; and (d) resolved the problem, creating reflective discussion questions based on the case-study experience.

In Phase 2, the ESOL teacher candidates (a) prepared podcasts (e.s., the ESOL teacher candidate's brief introduction of the study, selected English learners' interview samples, and English learners' reading samples), (b) uploaded and published them in MP3 format to a Web server, and (c) blogged their written portion of the case study, which they uploaded to the Web using a blog tool in Google Sites or Ning. Then, they copied the URL of their MP3 files for use in the assigned Web page. The teacher candidates used Google Sites and Ning for uploading these projects, because they could be securely managed by inviting only enrolled ESOL teacher candidates.

This research focuses on Phase 2 of the EL case-study to explored and understand ESOL teachers' process of learning instructional technologies through their assignments. Using Google Sties, I created a website for these case-study portfolios. The ESOL teacher candidates podcasted interview segments, verbal protocols that ELs produced, and reading samples; they blogged the written portion of the case study and the ELs' writing samples in the assigned website. The project points constituted 30% of their total grade for the course, with 10% for technological aspects such as podcast and blog quality. Most of the students added more graphics, pictures, and writing samples than required, which indicated ESOL teacher candidates' engagement with the project.

2.2. Data collection and analysis

In this qualitative case-study inquiry, I used multiple cases, developing both within-case and cross-case analyses (Creswell, 2007). Data collection involved four avenues: (a) observation and field notes, (b) a brief anonymous survey, (c) interviews after the completion of the course in which the ESOL candidates shared their thoughts and experiences, and (d) two Google Sites to which EL case studies were posted. As an instructor of the course, I observed the candidates throughout the assigned semester. I collected field notes during the semester, writing reflective notes immediately each class session. A brief anonymous survey conducted at the beginning of the semester assessed the ESOL teacher candidates' general knowledge of instructional technology. In order to get the support they needed, the candidates reported their proficiency honestly. I chose Google Sites as a data-collection tool because the ESOL teacher candidates podcasted audio files and blogged their case studies into Google Sites.

After the semester was over, I conducted a main interview with each of the six ESOL teacher candidates separately to avoid any bias from the participants. The interviews consisted of one main interview and a follow-up interview for member checking (Lincoln & Guba, 1985). The main interview included participants' personal demographic information, attitudes and experiences around podcasting and blogging, their expectations, reflections, and other insightful anecdotes. The follow-up interviews focused on confirming their initial responses, clarifications of initial interview data, and newly developed questions that grew out of their reflections. These multiple data sets, including observation and reflection notes after each class session, students' case-study portfolios, and two interviews with each participant, were carefully employed to triangulate the study's findings.

For the study's data analysis, I followed Strauss and Corbin's (1998) grounded-theory methodology. Using qualitative research, I identified patterns and themes throughout the study using Creswell's (2007) constant–comparative method. Open coding facilitated cross-sectional indexing according to a set of common principles and measures to develop information categories. I examined the texts (e.g., interview transcriptions, field notes, and EL portfolios) based on *constant comparison*, which "combines inductive category coding with a simultaneous comparison of all social incidents observed and coded" (LeCompte & Preissle, 1993, p. 256). Once I developed an initial set of categories, I designated each category as a central phenomenon to be studied (e.s., ESOL teacher candidates' experiences) and explored its interrelationships with the other categories using Creswell's (2007) *axial coding–causal conditions* technique, including strategies, context, and consequences to create a coding paradigm. Themes emerged inductively from the data. Finally, the analysis of the study reached saturation, that is, the themes tended toward convergence.

Multiple sources of data, inductive analysis (Patton, 1990), and member-checking all confirmed the naturally emerging findings. This qualitative methodology reveals the ESOL teachers' experiences in implementing instructional technology and their own stories. Like most qualitative research, the study may not be generalizable because of the small sample size and because the findings may be context-specific. The study is transferable, however, as a thick descriptive study filled with *emic* voices (Lincoln & Guba, 1985).

Aware of my dual positionality as instructor and researcher, I performed *peer debriefing* and maintained a *reflexive journal* to ensure the trustworthiness of the study. *Keep-on-going* questioning enhanced my awareness of positionality, encouraged discourse with the research questions, dialogue with the literature review, and deep interaction with the participants throughout the study (Lincoln & Guba, 1985).

3. Results

The findings provided a window on the ESOL teacher candidates' attitudes, processes, and reflections while podcasting and blogging their EL case studies. This research illuminates ESOL teachers' experience while implementing instructional technology to teach ELs. Challenges exist to finding the best use for new instructional media such as podcasting and blogging, but they have the potential, as in this instance, to form meaningful assignments for new ESOL teachers and to help them create Web pages with their own students. Five themes emerged: (a) ESOL teacher candidates' attitudes and self-assessments, (b) their implementation of podcasting and blogging, (c) their challenges and rewards, (d) their professional development, and (e) their impact on new generations of students- particularly ELs.

3.1. Attitudes and self-assessments

At the beginning of the semester, the ESOL teacher candidates' various attitudes were closely connected to their knowledge of and experience with technology. A brief anonymous survey determined that 92% of total participants ($N = 39$: $n = 16$, Group A, and $n = 23$, Group B) identified themselves as novices. In particular, 95% ($N = 39$), had never practiced podcasting, and 82% ($N = 39$) had no experience with blogging. Overall, students in the two groups self-assessed as absolute beginners.

ESOL teacher candidate–participants' attitudes shifted after completing their EL case-study. Four ESOL teacher candidates were raw beginners, and two were intermediate based on their self-evaluation of experiences and prior knowledge of technology. Those with prior knowledge of and experience with technology were willing to be involved in any project at the beginning of the semester, but students without any particular prior knowledge and experience were for more anxious as they struggled both technically and psychologically (Lambert et al., 2008). Rebecca shared her anxiety with regard to these technology tools using her *new literacy* metaphor:

> Absolutely, I am a technological immigrant. I was *an immigrant* the first time around when I learned English, and now I am a *technological immigrant*. Yeah, that's what my young classmates call me- the technological immigrant. It's very generational … I had to talk about something that is not in their reality, because they were very inner-city kids, and I had to introduce an author from the 18th century … who they would never have picked up and read on their own. So I tried to relate the theme of self-reliance to current media…. I would describe it as things that would enhance the actual engagement and meaning, like blogging, or even text messaging. (Interview with Rebecca)

While recognizing herself as a technology immigrant, Rebecca also explained her current situation and evinced her frustration throughout the semester. Positioning herself as a technology immigrant, she reflected on her previous experience of being immigrant to this country; she demonstrated her feelings of powerlessness and indicated her *technology shock,* which can be understood in similar contexts as the *language shock* and *cultural shock* (Ward, Bochner, & Furnham, 2001) immigrants commonly experience. I asked Rebecca if she had read Prensky, but she had not. Unaware of Prensky's term digital immigrants (Prensky, 2001, p. 1), Rebecca just came up with the phrase *technology immigrant*.

I used the term *technology shock*, referring to the psychological reactions to unfamiliar environments (Ward et al., 2001) that often cause the anxiety and feelings of surprise, disorientation, uncertainty, and confusion in new situations in which people have to operate new technologies in a sociocultural environment. In such a context, Rebecca was called upon to implement new instructional technologies such as podcasting and blogging.

Lisa, Joy, and Jackie also addressed their technology limitations. Lisa felt frustrated by her lack of proper tools. But, although she lacked a proper computer, Lisa recognized the importance of learning and using technology tools. She wanted to keep up with new technology: "It is extremely important. I mean, I'm not the most technological person in the world… but I recognized the importance". Like Lisa, Joy wanted to overcome her limitations and to look toward the future. Joy said, "I've looked up podcasting…. But I'd definitely say I'm very limited." While not seeing herself as a novice, but Jackie addressed her anxiety about dramatic updates and changes in technology: "I wouldn't consider myself a novice, because I've really had a lot of experience with it… because technology is always advancing, I don't think I'll ever learn it all." Jackie expressed her anxiety about learning new technology. She enjoyed the new technology, however, understanding that she would benefit from it, and she demonstrated genuine interest in implementing it. All the candidates agreed that the mastery of new technology is a necessary component of being a competent teacher.

Michelle and Kyle, with their intermediate-level technology exposure, welcomed and enjoyed this opportunity. Kyle in particular acknowledged the advantages of using these free technologies and displayed his positive attitudes toward technology using a current and practical example:

> When you do a classroom publication of students' creative writing, instead of spending the $30 per student to create a classroom book, now you can throw it on the classroom website. It's still available to everyone just like it was, but it didn't cost anything now.

The ESOL teacher candidates' attitudes toward instructional technology clearly reflected their knowledge and experiences. They demonstrated anxiety about their technological proficiency initially, but as Lambert et al. (2008) anticipated in their previous study, attitudes soon shifted to acknowledge the importance of technology after completing the assignment.

3.2. Implementation of podcasting and blogging

As Rosell-Aguilar (2007) anticipated, the ESOL teacher candidates all recognized the advantages and benefits of podcasting and blogging in a core project and were certain that they would draw upon the technologies in their own teaching. The technology supporter of the class, Kyle, always in favor of using technology, offered his assistance to others throughout the semester. Even Rebecca, the technology immigrant, grew excited about the process, expressing her interest in using podcasts for her class. Despite her struggles in the process, Jackie also enjoyed her experience with podcasting and blogging: "Podcasting I thought was really cool… and easy." She showed her excitement in learning how to use these new technologies: "It really opened my eyes to it, because I've had it in my computer, but I really didn't know what it was for, and then having to use it, it's wanting me to use it for other things." Mastering these technologies and recognizing their potential as supplemental tools for all children transformed Jackie's thinking positively and powerfully.

The participants also responded very favorably to blogging. Rebecca said, "I would definitely [blog] that instead of, if I required a portfolio of them, instead of them having to turn in something written…, they can [blog] and I could be responding to them." Joy saw other possible uses for blogs such as "great to use in the classroom for publishing materials, publishing the students' works, and even for the parents." Joy transformed herself from learner to author: "I thought seeing my work up on this room [website] was incredible." They addressed the concept that podcasting and blogging provide opportunities for ongoing revision and reflection and also enables multiple people to access it (Davis & McGrail, 2009). The participants were also motivated to learn and discuss their productive learning experience. The experience of podcasting and blogging helped them understand the process and boosted their competence in implementing these tools, thus expanding their potential for their own classes.

3.3. Challenges and rewards

Most ESOL teacher candidates had various prior teaching experiences, but they had little experience with instructional technology. They learned, however, how to use it, and they reveled in their success as they became better teachers. The more challenged they were, the greater and more tangible their rewards. The ESOL teacher candidates created future teaching plans, demonstrating the pedagogical benefits of the technologies. Lisa said, "I greatly enjoy learning about technology as I am not very knowledge in this area…. I did not know what podcasting was before, so I am grateful for the inclusion of technology." Because Rebecca was such a novice in using podcasting and blogging, she encountered more challenges than other participants. Rebecca expressed her frustration the day the microphone in her laptop did not work when she had planned to conduct an interview. Due to her limitations and her attitude towards technology, I often met with Rebecca in my office after classes to assist her in person. Jackie and Michelle also reported their frustration throughout the process. Jackie expressed her frustration with "You know, so there are so many different things you have to do when you're using the technology that is so time-consuming."

Michelle echoed Jackie's sentiments, but with a positive nuance:

> Frustrating at times… enjoyable, kind of, for the most part. Frustrating, because I didn't know how to do it, and I was constantly having to ask someone, so I felt like I was bothering them, but fun because I got to see the final product.

Seeing her project published, Michelle saw her learning process as positive and productive. Participants also observed that the work could take considerable time, particularly if they faced technical problems.

The ESOL teacher candidates were eagerly proactive in this changing world, and they definitely felt the need for good technical support. They also reported having requested help from family members, friends, and professionals in the institute whenever they encountered technological problems. Although they expressed positive responses after completing this project, they shared other concerns as learners themselves. Furthermore, not having easy access themselves to updated computers at home, Lisa and Joy were concerned that their students might experiences the same difficulties.

Another big challenge was that the ESOL teacher candidates viewed themselves as learners and were very concerned about their grades: five of the participants, feeling limited as technological novices, voiced this concern plainly. Rebecca always worried about her grade: "My major concern was that my lack of experience in technology not hinder my grade." Lisa was very up front: "but when it's part of my final grade, and, again, it's not a technology class, it's an SLL class, that's where I felt nervous and anxious a lot of times." The ESOL teacher candidates definitely were not hindered by a lack of technological proficiency, but they did not want to support any disadvantage because of their technology inexperience or weak knowledge of instructional technology.

Despite these challenges, the candidates understood the benefits. As Joy said, "The aspects of instructional technology, including blogging and podcasting, for our EL case-study has been challenging but rewarding. It has given us the opportunity to stretch our technology skills and has added depth and expertise." Although some ESOL teacher candidates demonstrated anxiety toward technology, when they saw their projects published, their responses and confidence were largely identical and enthusiastic. Michelle couldn't agree more that instructional technology offers great opportunities for both the student and the teacher, and she emphasized that she planned to employ it in teaching her own students in the future. Her transformative learning provided transformative teaching.

3.4. Professional development

The ESOL teacher candidates demonstrated their multilevel experience with instructional technologies. Their responses were mostly positive and constructive as they addressed the importance of learning new technologies in teacher education. Rebecca referred to her positioning as a teacher, "I think if you feel threatened by adaptation, then you shouldn't be in teaching, because all professions change. Nothing stays the same." Both Joy and Rebecca responded positively:

> Joy: I would love to advance my technology skills…. I would say that it helped me to grow, for one thing, because living in the information age, to be able to have that fear, a big part of that fear taken away with the technology experience, that to me is just extremely important. So definitely that would be the greatest thing I would say that it has helped me with, and certainly something that's going to make me a better teacher. I'm not afraid to try the new technology. I'm not afraid to—I just think it's incredible. We really learned so much more.
> Rebecca: Well, I think it's… a new tool that you know can be used. So that in itself is… a little bit of professional development. You keep it in the back of your head that that's a possibility, that's something that I can use in the future.

Joy and Rebecca indicated that their new competence in implementing technology enhanced their professional development. As Joy said, "The podcasting assignment has given me the opportunity to listen, investigate, and analyze my data more thoroughly. Also, I have the resources available from the technology to listen multiple times." She also alluded to the benefits for ELs of using podcasting and blogging. Even though she had frequently expressed her frustration to me in person, Rebecca, who initially had described herself as a technology immigrant, no longer regarded herself as one-, thus it was a positive surprise that showed her transformation. She added, "I would love to be able to do podcasts, because I think kids would love to do a podcast of a book review, instead of doing a written book review." She already had a plan for how she would use podcasting in her teaching in the future.

Similarly, Michelle and Lisa also acknowledged that they will be competent candidates thanks to this experience. Michelle also created her own personal bio-poem project during the semester and wants to create podcasts with her future students. These percolating new ideas demonstrate the teacher candidates' transformation from their own learning to their future teaching. The ESOL teacher candidates clearly understood that learning how to podcast and blog would benefited their future teaching. Uploading and sharing their projects on the website built their confidence. They learned different perspectives. Their ownership of learning becomes teaching (Kim, 2009a).

3.5. New generations of students

All participants addressed the concept that their students constitute a new generation, the *net generation* of *digital natives* (Prensky, 2001), capable of using technologies and far more accustomed to them than previous generations. The participants understood that there would be gaps between teachers and students. These experiences would enable them to be more technologically skillful teachers who can use various free tools to enhance their teaching.

> Kyle: With the small technologies, with the iPhones and with the Internet accessible gear, I think it would work better because students would be able to respond pretty much any time. They could go on and check the classroom discussion board, see what was happening, and respond pretty much anywhere they are at any time.

Rebecca also agreed with the other teacher candidates: "So why not engage them in the technologies that they are used to. It just doesn't make any sense to not use that skill that they have." Drawing on new-generation students' skills and strengths would enhance their own teaching and their students' learning. Joy added, "I mean, kids nowadays, they're very—it's the information age."

Because the ESOL teacher candidates are eager to teach ELs, they are eager excited to learn new instructional technologies and to create new ways of using these technologies for ELs. The ESOL teacher candidates also agreed that podcasts and blogs increased ELs' engagement. Michelle described the ESOL learners' excitement:

> The technology allowed—I think, the students [ELs] were more excited about finishing their product and making sure that it was really done well, because they were able to record their own voice and then they were going to get to hear it later on.

All other participants reported ELs' positive engagement in their projects and their engagement of the processes.

> As O'Bryan and Hegelheimer (2007) explored how podcasting is useful for language learners, this study demonstrated that podcasting can enhance ELs' listening skills. Michelle articulated the benefits to ELs:
> It's visual and it's auditory, so that you actually know how to say it, which can be difficult for you, you just see it written, you are, like, I don't know what all that means, so you need to hear it sometimes.

Jackie wants to create a digital book for her EL kindergarten students, taking into consideration that ELs are audio and visual learners (Ellis, 2008). Michelle, likewise, heavily emphasized the obvious benefits to ELs who rely more on visualization in their learning. During reflection sessions, the ESOL teacher candidates described how ELs enjoyed listening to their recorded voices and how they voluntarily tried to correct their pronunciation (Kaplan-Leiserson, 2005). Rebecca observed that using podcasting and blogging tools enhanced ELs' learning by stimulating their multiple intelligences: "It exponentially enhances what you're trying to show them by having certain tools that makes it more interesting, or having tools that engage… multiple intelligence[s]."

All participants, including the very beginner users, said that they felt privileged to have had these experiences. Rebecca, the former technology immigrant, said, "I am extremely grateful of the fact that she exposed me to all that stuff, because I know now that it's available, I just have not had a chance to use it since then." Jackie said, "The ESOL courses—they've helped me—I think the case studies have helped more… you're actually using real people… you're trying to help them, and you're doing research. That part has helped me a lot." From the first steps of selecting an English learner and collecting multiple data, to analyzing the data helped the ESOL teacher candidates to better understand an English learner (Kim, 2009a). The EL case-study project was challenging, but it transformed their learning and made them capable innovative teachers at that same time.

4. Discussion

The results from this qualitative research provided insight into how ESOL teacher candidates incorporated new technologies such as podcasting and blogging in a core project. The three main ideas emerging from the data that result from this study are (a) podcasting and blogging as learning objects, (b) dialoguing with tasks and future students, and (c) benefits for English learners.

4.1. Podcasting and blogging as learning objects

The benefits of using technology appear clear. ESOL teacher candidates realized that their future students will be a new generation who learn technology intuitively and are skillful users before coming to school, so the candidates want to use these tools to enhance their student's learning inside and outside the classroom. The ESOL teacher candidates had already constructed several venues for using these technologies. They believed that these technologies clearly provided essential teaching tools for ELs that can provide multiple avenues of access to materials with audio and visual components. ESOL teacher candidates also noted that ELs showed excitement when using these technologies.

As Lau and Woods (2008) observed, an individual's attitude toward the use of learning objects is influenced by the individual's perception of their ease of use and utility. The accuracy of their observation was evident throughout this study. Due to their lack of prior knowledge at the beginning of the semester, Joy, Rebecca, Lisa, and Jackie all disclosed serious anxiety about implementing technologies in their projects, but they demonstrated their positive attitude toward learning their tools. They understood the benefits of gaining experience and thus mastering these skills. The women's attitudes shifted and they demonstrated their eagerness to learn in order to become competent teachers. Furthermore, they became extremely proactive in learning new technologies and implementing them into the project.

Learning objects such as podcasting and blogging must be integrated into the instructor's teaching objectives and goals, enabling ESOL teacher candidates to extend these into their own future teaching. Implementing podcasting and blogging as an assignment in the course was the most effective way of teaching ESOL teacher candidates who will use these technologies with their future ELs. As Lee et al. (2008) noted, students create their knowledge building individual and collective learning by negotiating meaning by themselves, with classmates, with tasks, and with the instructor.

Through the process, their sense of themselves, their attitudes toward learning, and their purposeful thinking have shifted and changed and the teacher candidates have developed ownership of learning, mirroring their professional development. As Churchill (2009) and McKinney et al. (2009) discussed, the teacher candidates all recognized the benefits they would derive from these experiences and from learning new technologies. Often, their identities as learners and as future teachers shifted. For example, Rebecca's identity shifted from technology immigrant to "competent teacher." As they wanted to enhance their students' learning, they already displayed positive attitudes toward learning and integrating podcasting into their project. Integrating additional instructional technologies into the assignments and course work will provide ways for teacher candidates to learn and practice for their future enhanced teaching.

While developing their competence, ESOL teacher candidates were simultaneously students seeking good grades, which engendered other anxieties. Their identities shifted from one to the other, requiring that the instructor respond by previous good examples and helpful guidelines. All the candidates expressed concern about their grades; they did not want to receive a poor grade as a result of the instructional—technology component of the cause. To reduce this anxiety, a detailed grading scale and collaborative work with experts are vital. Giving the teacher candidates a clear example of the implementation would be especially helpful in this regard. Also, providing appropriate technical support and mentorship as well as useful online resources will diminish this anxiety (Brown & Warschauer, 2006; Kim, 2009a, 2009b).

4.2. Dialoguing with tasks and future students

ESOL teacher candidates may create various resource centers or websites with their own students (Dlott, 2007) to extend their lived experiences from my course to their own worlds. In creating learning objects, candidates dialogued with my teaching objectives and extended their future teaching objectives. Fig. 1 was developed to illustrate this learning phenomenon. An instructional technology called "learning objects" (IEEE, 2000) carries positions of technology of choice into the next generation of instructional design, development, and delivery, which, in turn, provide the technology's potential for reusability, generativity, adaptability, and scalability (Wiley, 2001). The EL case-study project chose the learning objects of podcasting and blogging to satisfy the learning objectives and goals of the course.

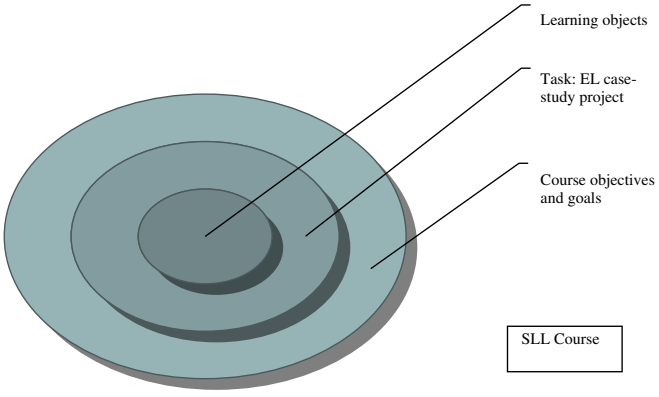

Fig. 1. Interrelationship between learning objects, task, and course objectives in SSL course.

To fulfill the teaching objectives and goals (Fig. 1), each ESOL teacher candidate must create an EL case-study portfolio as a learning object. This portfolio requires learning objects that consist of ELs' portfolios: implementing podcasting of ELs' interview clips and verbal protocol segments as well as blogging as the written portion of the case study. Learning objects are referenced as the smallest elements to achieve the performance objective or outcome (Wagner, 2002). Podcasting and blogging in the EL case-study created a task that is reusable, generative, adaptable, and scalable for future projects (Wiley, 2001). To carry out this required assignment, the ESOL teacher candidates dialogued by themselves, with ELs, with their own tasks, and with their learning processes by collaborating or interacting with classmates. The task provided to the ESOL teacher candidates afforded them the opportunity to dialogue with ELs and to listen to ELs' voices in real contexts. The ESOL teacher candidates appreciated that they were able to learn about and master these tools via the SLL course. Furthermore, as the candidates learn new technologies, they are ready and eager to employ them with their students, demonstrating their very positive reflections about learning new technologies for their professional development and scaling up to the next level (Wiley, 2001). The ESOL teacher candidates' reflections demonstrate the necessity and urgency of integrating these technologies into the curriculum (Bai & Ertmer, 2008; Brown & Warschauer, 2006). Podcasting and blogging in the educational setting are effective, available tools for future generations (Kao & Tsai, 2009).

It is crucial to create easy, simple, and clear procedures for achieving learning objects and teaching objectives for educators who want to implement instructional technology and for ESOL teacher candidates who want to expand their teaching capacities (Kim, 2009a). Anecdotal evidence suggests that providing learning opportunities to integrate into projects gives students some degree of stress and anxiety, but they are eager to learn and practice. To support their learning, well-prepared project guidelines are vital (Kim, 2009b). Similarly, collaboration (Lee et al., 2008) and attentive mentorship are strongly recommended.

ESOL teacher candidates understand that they are already empowered with the new knowledge they have gained through the project (Lee et al., 2008). Their constructive view of learning (Vygotsky, 1978) has been observed throughout the processes and has demonstrated their competence as professionals. The findings also suggest that teaching new technologies will encourage ESOL teacher candidates to seek, locate, and use more online resources (e.g., Google Sites), creating concrete learning objects that advance ESOL teacher candidates' teaching objectives.

4.3. Benefits for English learners

Understanding the variability of ELs will provide ESOL teacher candidates with insight, not only for completing their EL case-study, but also into learning how to implement podcasting and blogging. All participants agreed that these new technologies would enhance their future teaching. Especially for ELs, these technologies offer multiple points of access to materials and the ability to make multiple revisions (Davis & McGrail, 2009; Evans, 2008; O'Bryan & Hegelheimer, 2007) that are reusable (Wiley, 2001), which would have a positive impact on their learning. Lord (2008) concluded that using a collaborative podcasting project in a Spanish phonetic class was a beneficial and practical project that fulfilled its purpose. Hsu et al. (2008) also demonstrated the use of audioblogs to provide efficient and effective ways to evaluate language learning experiences. Because these technologies also provided audio and visual aspects to learners and repetitive reviews, ELs would benefit from learning to use these technologies.

5. Conclusion

Implementing technology in the classroom was fun, effective, and beneficial for all of us. As Kaplan-Leiserson (2005), Lord (2008), and O'Bryan and Hegelheimer (2007) concluded, these technologies provide concrete benefits to ELs who are audio and visual learners, in turn providing multiple reviews. According to the ESOL teacher candidates' reflections, ELs paid more attention to their progress and showed positive engagement in their own learning process when exposed to these technologies. Instructional technology, such as podcasting and blogging, provides excellent tools for future teaching and learning and for building bridges to younger people, particularly ELs. Pedagogically, it will be beneficial to know how to implement teaching in a more exciting context. The results of this study can guide effective implementation of podcasts and blogs as well as research into other instructional technologies. As innovative instructional technology is developed, we are increasingly more able to learn and teach what we want, when we want, and where we want.

References

Apple Computer. (2005). iTunes U. Retrieved from. http://www.apple.com/education/itunesu_mobilelearning/itunesu.html.
Audacity. (2010). Audacity. Retrieved from. http://audacity.sourceforge.net/.
Bai, H., & Ertmer, P. A. (2008). Teacher educators' beliefs and technology uses as predictors of preservice teachers' beliefs and technology attitudes. *Journal of Technology and Teacher Education, 16*, 93–112.
Brown, D., & Warschauer, M. (2006). From the university to the elementary classroom: students' experiences in learning to integrate technology in instruction. *Journal of Technology and Teacher Education, 14*, 599–621.
Cebeci, Z., & Tekdal, M. (2006). Using podcasts as audio learning objects. *Interdisciplinary Journal of Knowledge and Learning Objects, 2*, 47–57.
Cole, M. (1991). Conclusion. In L. B. Resnick, J. M. Levin, & S. Teasley (Eds.), *Perspectives on socially shared cognition* (pp. 398–417). Washington, DC: American Psychological Association.
Churchill, D. (2009). Educational applications of web 2.0: using blogs to support teaching and learning. *British Journal of Educational Technology, 40*, 179–183.
Creswell, J. W. (2007). *Qualitative inquiry and research design: Choosing among five approaches* (2nd ed.). Thousand Oaks, CA: Sage.
Davis, A., & McGrail, E. (2009). "Proof-revising" with podcasting: keeping readers in mind as students listen to and rethink their writing. *Reading Teacher, 62*, 522–529.
Deng, L., & Yuen, A. H. K. (2009). Blogs in higher education: implication and issues. *TechTrends: Linking Research and Practice to Improve Learning, 53*(3), 95–98.
Dlott, A. M. (2007). A (pod)cast of thousands. *Educational Leadership, 64*(7), 80–82.
Ducate, L. C., & Lomika, L. L. (2008). Adventures in the blogosphere: from blog readers to blog writers. *Computer Assisted Language Learning, 21*, 9–28.
Duke University. (2006). *Duke digital initiative*. Office of Information Technology. Retrieved from. http://duke.edu/ddi/.
Ellis, R. (2008). *The study of second language acquisition*. Oxford, UK: Oxford University Press.
Evans, C. (2008). The effectiveness of m-learning in the form of podcast revision lectures in higher education. *Computers and Education, 50*, 491–498.
Garageband. (2010). GarageBand'11. Retrieved from. http://www.apple.com/ilife/garageband/.
Google. (1999). Blogger. Retrieved from. http://www.blogger.com/.
Google. (2009). Google sites. Retrieved from. http://sites.google.com/.
Guardian Newspaper. (2004). Abuse.com leader comment, 11 April 2007. Retrieved from. http://www.guardian.co.uk/commentisfree/story/0,2054184,00.html.

Hammersley, B. (2010). Audible revolution. Retrieved from. http://www.guardian.co.uk/media/2004/feb/12/broadcasting.digitalmedia.
Harris, H., & Park, S. (2008). Educational usages of podcasting. *British Journal of Educational Technology, 39*, 548–551.
Hew, K. F. (2009). Use of audio podcast in K–12 and higher education: a review of research topics and methodologies. *Education Technology Research Development, 57*, 333–357. doi:10.1007/s11423-008-9180-3.
Hoskins, S. L., & Hooff, J. C. (2005). Motivation and ability: which students use online learning and what influence does it have on their achievement? *British Journal of Educational Technology, 36*, 177–192.
Hsu, H.-Y., Wang, S.-K., & Comac, L. (2008). Using audioblogs to assist English-language learning: an investigation into student perception. *Computer Assisted Language Learning, 21*, 181–198.
IEEE.. (2000). Learning technology standards committee. Retrieved from. http://www.ieeeltsc.org:8080/Plone.
Kao, C., & Tsai, C. (2009). Teachers' attitudes toward web-based professional development, with relation to Internet self-efficacy and beliefs about web-based learning. *Computers and Education, 53*, 66–73.
Kaplan-Leiserson, E. (2005). Trend: podcasting in academic and corporate learning. Retrieved from. http://www.astd.org/LC/2005/0605_kaplan.htm.
Kim, D. (2009a). Innovative educational technology in your classroom in a global context. *Essential Teacher, 6*(1), 37–39.
Kim, D. (2009b). Podcasting and online journals as ESOL resources. In A. Smith, & S. Strong (Eds.), *Adult language learners: Context and innovation* (pp. 31–38). Alexandria, VA: TESOL.
Kim, D., Rueckert, D., Hwang, Y., et al. (2008). Let's create a podcast! In K. McFerrin (Ed.), *Proceedings of the society for information technology and teacher education international conference 2008* (pp. 3563–3567) Chesapeake, VA: AACE.
Kolari, P., Finin, T., & Joshi, A. (2006). *SVMs for the blogosphere: Blog identification and splog detection*. Paper presented at the AAAI Spring Symposium on Computational Approaches to Analyzing Weblogs. College Park: University of Maryland.
Lambert, J., Gong, Y., & Cuper, P. (2008). Technology, transfer, and teaching: the impact of a single technology course on preservice teachers' computer attitudes and ability. *Journal of Technology and Teacher Education, 16*, 385–410.
LAME Encoder. (2010). The LAME project. Retrieved from. http://lame.sourceforge.net/.
Lau, S., & Woods, P. C. (2008). An investigation of user perceptions and attitudes towards learning objects. *British Journal of Educational Technology, 39*, 685–699.
LeCompte, M. D., & Preissle, J. (1993). *Ethnography and qualitative design in educational research*. Oval Road, London: Academic Press.
Lee, J. W., McLoughlin, C., & Chan, A. (2008). Talk the talk: learner-generated podcasts as catalysts for knowledge creation. *British Journal of Educational Technology, 39*, 501–521.
Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. London, UK: Sage.
Lord, G. (2008). Podcasting communities and second language pronunciation. *Foreign Language Annals, 41*, 374–389.
McKinney, D., Dyck, J. L., & Luber, E. S. (2009). iTunes University and the classroom: can podcasts replace professors? *Computers and Education, 52*, 617–623.
Merriam, S. B. (1998). *Qualitative research and case study applications in education*. San Francisco, CA: Jossey-Bass.
National Council for Accreditation of Teacher Education. (2002). *Professional standards for the accreditation of schools, colleges, and departments of education*. Washington, DC: Author.
O'Bryan, A., & Hegelheimer, V. (2007). Integrating CALL into the classroom: the role of podcasting in an ESL listening strategies course. *ReCALL, 19*, 162–180.
Patton, M. Q. (1990). *Qualitative evaluation and research methods* (2nd ed.). Newbury Park, CA: Sage.
Petersen, S. A., Divitini, M., & Chabert, G. (2008). Identity, sense of community and connectedness in a community of mobile language learners. *ReCall, 20*, 361–379.
Prensky, M. (2001). Digital natives, digital immigrants. *On the Horizon, 9*(5), 1–10.
Putman, M. (2008, May). *Using podcasts to enhance spelling and vocabulary development*. Paper presented at the International Reading Association Annual Conference, Atlanta, GA.
Rosell-Aguilar, F. (2007). Top of the pods—in search of a podcasting "pedagogy" for language learning. *Computer Assisted Language Learning, 20*, 471–492.
Sloan, S. (2005, March). Podcasting: an exciting new technology in higher education. Retrieved from. http://edupodder.com/conferences/index.html Paper presented at CATS.
Stephens, M. (2007). All about podcasting. *Library Media Connection, 25*(5), 54–56.
Strauss, A., & Corbin, J. (1998). *Qualitative research: Techniques and procedures for developing grounded theory*. Thousand Oaks, CA: Sage.
University of South Florida. (2007). Tech-ease. Retrieved from. http://etc.usf.edu/TE/.
Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Cambridge, MA: Harvard University Press.
Wagner, E. (2002). The new frontier of learning object design. *The e-Learning Developers, 18*, 1–8.
Ward, C., Bochner, S., & Furnham, A. (2001). *The psychology of culture shock*. East Sussex, UK: Routledge.
Wikipedia. (2007). Digital audio learning objects. Retrieved from. http://en.wikipedia.org/wiki/Digital_Audio_Learning_Objects.
Wiley, D. A. (2001). Connecting learning objects to instructional design theory: a definition, a metaphor, and a taxonomy. In D. A. Wiley (Ed.), *The instructional use of learning objects* (pp. 1–35). Bloomington, IN: Association for Educational Communications and Technology.
Windschitl, M. (2000). Constructing understanding. In P. B. Joseph, S. L. Bravmann, M. A. Windschitl, E. R. Mikel, & N. S. Green (Eds.), *Cultures of curriculum* (pp. 95–136). Mahwah, NJ: Erlbaum.
Woodward, J. (2007). Podcasts to support workshops in chemistry. Retrieved from. https://connect.le.ac.uk/lfconimpalajonny/.